Frequency response modeling of electric power systems.

Altukhova M. K., Liulina M. A., Ryndina I. E., Chudny V. S.

Modern power systems are notable for large power stations generators facilitated with automatic excitation control (AEC). Thus, practical setting methods aligned with conditions of the excitation control adaptation are becoming of great importance.

This work provides methodology of regulator adaptation subsystem building, which is based on using system variables transfer functions derived from the experimental frequency responses. Notably, selection of stabilization factors, ensuring maximum stability level, is made with characteristic polynomial defined by the transfer functions obtained.

Requirements for the transfer function structure and parameters, which guarantee retention of the object's dynamic properties, are set. In addition, requirements for assessment of its influence on stability level if stabilization factors change are specified.